

Attorney Docket No. 7175-74147
Application No. 10/083,966 (Filed February 25, 2002)
Reply to Office Action dated December 24, 2003
AMENDMENTS TO THE CLAIMS

This listing of claims below will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(currently amended) An apparatus for inducing sputum from a patient, the apparatus comprising:

a chest compression vest for applying force to a chest region of the patient;

a pressure generator connected to the vest for providing an oscillating pressure;

and

~~a mouthpiece for placement in a mouth of the patient wherein the mouthpiece minimizes~~ having a first portion configured to extend sufficiently into the patient's mouth to depress the patient's tongue to minimize airflow resistance, the first portion of the mouthpiece placed in the patient's mouth being configured to be spaced apart from the patient's trachea.

2.(original) The apparatus of claim 1 and further comprising:

a support which maintains the patient in a generally standing position.

3.(original) The apparatus of claim 1 wherein the pressure generator provides the oscillating pressure at a frequency of between about 5 pressure cycles per second and about 25 pressure cycles per second.

4.(original) The apparatus of claim 3 wherein the oscillating pressure has a frequency which is approximately a chest resonant frequency of the patient.

5.(original) The apparatus of claim 3 wherein the oscillating pressure has a frequency between about 12 pressure cycles per second and about 15 pressure cycles per second.

6.(original) The apparatus of claim 3 wherein the pressure generator provides a positive pressure bias to the vest.

7.(original) The apparatus of claim 1 wherein the vest has a lower edge for positioning near a bottom of a rib cage of the patient and an upper edge for positioning near a collar bone of the patient.

8.(original) The apparatus of claim 1 wherein the mouthpiece is removable to permit the patient to expectorate an induced sputum sample.

9.(canceled)

10.(currently amended) The apparatus of claim 1 wherein the first portion of the mouthpiece has a generally oval cross-section.

11.(currently amended) The apparatus of claim 10 wherein the first portion of the mouthpiece is about 1.5 inches wide, about 0.6 inches high and extends about 1.5 inches into the mouth.

12.(currently amended) The apparatus of claim 1 wherein the mouthpiece has a second portion adapted for location outside the mouth, and further comprising: the second portion has a port on the mouthpiece for connection to a source of an aerosolized solution.

13.(currently amended) The apparatus of claim 12 wherein the second portion of the mouthpiece has a length adapted for limiting loss of the aerosolized solution.

14.(currently amended) The apparatus of claim 1 wherein the mouthpiece has a ~~first portion adapted for location inside the mouth and~~ a second portion adapted for location outside the mouth, ^{in chest communicate with the outside} the second portion having a length of about 8 inches.

15.(original) The apparatus of claim 1 wherein the mouthpiece is sized to permit an airflow velocity of greater than 50 ml/cycle.

16.(original) The apparatus of claim 15 wherein the mouthpiece is sized to permit an airflow velocity of about 90 ml/cycle.

17.(original) The apparatus of claim 1 wherein the mouthpiece extends about 1.5 inches into the mouth.

18.(original) The apparatus of claim 1 wherein the mouthpiece is sized to maximize airflow velocity and minimize the loss of an aerosolized solution.

19.(original) The apparatus of claim 1 wherein a sputum sample is induced by the force applied by the chest compression vest.

20.(currently amended) An apparatus for inducing sputum from a patient, the apparatus comprising:

a chest compression vest for applying force to a chest region of the patient;
a pressure generator connected to the vest for providing an oscillating pressure;
a mouthpiece for placement in a mouth of the patient to minimize airflow resistance, the mouthpiece including a port adapted for connection to a source of an aerosolized solution, the aerosolized solution being fed to the mouthpiece along a path not passing through the vest; and

wherein the force applied by the chest compression vest induces sputum from the patient.

21.(original) The apparatus of claim 20 wherein the mouthpiece includes a first portion for holding open the mouth of the patient while depressing a tongue of the patient and a second portion for location outside the mouth, the second portion having the port.

22.(original) The apparatus of claim 21 wherein the first portion of the mouthpiece has a generally oval cross-section.

23.(original) The apparatus of claim 22 wherein the first portion of the mouthpiece is about 1.5 inches wide, about 0.6 inches high and extends about 1.5 inches into the mouth.

24.(original) The apparatus of claim 21 wherein the second portion of the mouthpiece has a length which limits loss of the aerosolized solution.

25.(original) The apparatus of claim 21 wherein the second portion of the mouthpiece has a length of about 8 inches.

26.(original) The apparatus of claim 20 wherein the aerosolized solution induces sputum from the patient.

27.(currently amended) An apparatus for inducing sputum from a patient, the apparatus comprising:

means for applying force to a chest region of the patient;

means for providing an oscillating pressure, the means for applying force being connected to the means for providing an oscillating pressure; and

~~means for minimizing airflow resistance wherein the means for minimizing airflow resistance are placed in a mouth of the patient~~

a mouthpiece having a first opening configured to be received in the patient's mouth, a second opening configured to be positioned outside the patient's mouth and communicating directly with atmosphere and a passageway extending between the first and second openings through which the patient inhales from and exhales to the atmosphere.

28.(original) The apparatus of claim 27 and further comprising means for maintaining the patient in a generally standing position.

29.(original) The apparatus of claim 27 wherein the means for providing an oscillating pressure provides the oscillating pressure at a frequency of between about 5 and about 25 pressure cycles per second.

30.(original) The apparatus of claim 29 wherein the oscillating pressure has a frequency which is approximately a chest resonant frequency of the patient.

31.(original) The apparatus of claim 29 wherein the oscillating pressure has a frequency between about 12 pressure cycles per second and about 15 pressure cycles per second.

32.(original) The apparatus of claim 29 and further comprising means for providing a positive pressure bias to the means for applying force.

33.(original) The apparatus of claim 27 wherein the means for applying force has a lower edge for positioning near a bottom of a rib cage of the patient and an upper edge for positioning near a collar bone of the patient.

34.(currently amended) The apparatus of claim 27 wherein the ~~means for minimizing airflow resistance~~ mouthpiece extends into the mouth, holds the mouth open and depresses a tongue of the patient.

35.(currently amended) The apparatus of claim 27 wherein the mouthpiece includes a first portion that extends into the patient's mouth, and the ~~means for minimizing airflow resistance~~ first portion has a generally oval cross-section.

36.(currently amended) The apparatus of claim 35 wherein the ~~means for minimizing airflow resistance~~ first portion is about 1.5 inches wide, about 0.6 inches high and extends about 1.5 inches into the mouth.

37.(currently amended) The apparatus of claim 27 wherein the ~~means for minimizing airflow resistance~~ is mouthpiece has a second portion adapted for location outside the mouth, and the second portion has a port connected to a source of an aerosolized solution.

38.(currently amended) The apparatus of claim 37 wherein the ~~means for minimizing airflow resistance~~ second portion of the mouthpiece has a length which limits loss of the aerosolized solution.

39.(currently amended) The apparatus of claim 27 wherein ~~the means for minimizing airflow resistance~~ the mouthpiece has a first portion adapted for location inside the mouth and a second portion adapted for location outside the mouth, the second portion having a length of about 8 inches.

40.(currently amended) The apparatus of claim 27 wherein the ~~means for minimizing airflow resistance~~ mouthpiece permits an airflow velocity of greater than 50 ml/cycle.

41.(currently amended) The apparatus of claim 40 wherein the ~~means for minimizing airflow resistance~~ mouthpiece permits an airflow velocity of about 90 ml/cycle.

42.(currently amended) The apparatus of claim 27 wherein the ~~means for minimizing airflow resistance~~ mouthpiece extends about 1.5 inches into the mouth.

43.(currently amended) The apparatus of claim 27 wherein the ~~means for minimizing airflow resistance~~ mouthpiece maximizes airflow velocity and minimizes the loss of an aerosolized solution.

44.(original) The apparatus of claim 27 wherein sputum is induced by the force applied by the means for applying force.

45.(original) The apparatus of claim 27 wherein a sputum sample is induced by the force applied by the means for applying force.

46.(new) An apparatus for inducing sputum from a patient, the apparatus comprising:

a chest compression vest for applying force to a chest region of the patient;

a pressure generator connected to the vest for providing an oscillating pressure;

and

a mouthpiece having a first opening configured to be received in the patient's mouth, a second opening configured to be positioned outside the patient's mouth and communicating directly with atmosphere and a passageway extending between the first and second openings through which the patient inhales from and exhales to the atmosphere.

47.(new) The apparatus of claim 46 wherein the mouthpiece includes a port separate from the first and second openings and communicating with the passageway, and the port is configured to be connected to a source of an aerosolized solution.